

Holotype, male, and *allotype*, female, to be placed in the National Collection at Ottawa. *Paratypes* in the collection of Mr. Ralph Hopping and that of the author.

Type locality.—Vernon, B. C. Collected April 6th, 1920, by Mr. Ralph Hopping. The elytral sculpturing in *modificata* is almost like that seen in *Eleodes cuneaticollis* Casey.

The following tabulation of characters will help in the recognition of *letcheri* and *vandykei* with its races:

- | | |
|--|------------------------------|
| Elytra muricately punctate..... | 1 |
| Elytra more or less muricato-granulate..... | 3 |
| 1. Elytra sparsely pubescent with rather long flying hairs..... | <i>letcheri</i> Blais |
| Elytra with short setae..... | 2. |
| 2. Elytra densely and muricately punctured, minutely so on the dorsum | <i>vandykei</i> Blais. |
| - . Elytra densely and moderately strongly muricato-rugose with intermixed punctures | var. <i>modificata</i> n. v. |
| 3. Size usually smaller, pronotum relatively smaller and quadrate; granules subtuberculate and more or less arranged in evident longitudinal series..... | var. <i>parvula</i> Blais. |

In *parvula* the pronotum is noticeably smaller, more quadrate, with the sides less arcuate and parallel.

The species of the subgenus *Lithleodes* may be arranged in the following sequence:

Eleodes (*Lithleodes*) *arcuata* Casey.

extricata Say.

Var. *convexicollis* Blais.

var. *utahensis*, new variety.

var. *cognata* Hald.

var. *arizonensis* Blais.

granulata Lec.

var. *obtusa* Lec.

var. *corvina* Blais.

papillosa Blais.

letcheri Blais.

vandykei Blais.

var. *parvula* Blais.

var. *modificata* Blais.

NEW NEARCTIC CRANE-FLIES (TIPULIDAE, DIPTERA). PART XI.

BY CHARLES P. ALEXANDER,

The types are preserved in the collection of the writer unless stated otherwise. The material from Idaho is preserved in alcohol; paratypes of certain of these species are placed in the collection of the United States National Museum at the request of Mr. Shannon.

Limnophila (*Idioptera*) *shannoni*, new species

General coloration (in alcohol) dark brown; coxae and trochanters light

yellow; wings greyish yellow, the cross veins and deflections conspicuously seamed with greyish brown; male hypopygium with the outer pleural appendage simple.

Male.—Length about 6.5 mm.; wing 8 mm.

Female.—Length 7.8 mm.; wing 8.4 mm.

Described from alcoholic material.

Rostrum and palpi dark brown. Antennae of the male long, if bent backward extending about to the base of the abdomen; scapal segments pale yellowish brown, the flagellum dark brown. Head dark brown, the genae paler.

Thorax dark brown, with no stripes evident in alcoholic material. Halteres pale, the knobs a little darker. Legs with the coxae and trochanters light yellow; femora yellow, broadly tipped with dark brown; tibiae brownish yellow; tarsi pale brown. Wings with a faint greyish yellow tinge, the wing-base and the costal and subcostal cells more yellowish; stigma oval, dark brown; conspicuous greyish brown seams at the origin of R_R ; at Sc_2 ; along the cord and outer end of cell 1st M_2 and along the supernumerary crossveins; veins dark brown. Venation: Sc_2 some distance from the tip of Sc_1 , this distance slightly variable; R_1 bent caudad at R which is inserted on R_2 a little more than its own length beyond the fork and on R_1 about its length from the tip; R spurred at origin, in alignment with $R_2 + 3$; basal deflection of $R_4 + 5$ and R in oblique alignment; petiole of cell M_1 much shorter than this cell; basal deflection of Cu slightly before midlength of cell 1st M_2 .

Abdomen dark brown. Male hypopygium with the pleurites stout; two pleural appendages, the outer appendage simple, narrow at the base, gradually widened to the squarely truncated apex, the outer margin and apex provided with numerous small appressed spines; inner pleural appendage a little longer than the outer, gradually narrowed to the bluntly rounded apex, the surface provided with setae.

Habitat.—Idaho.

Holotype, ♂, Moscow Mt., July 25, 1920 (R. C. Shannon).

Allotopotype, ♀.

Paratopotypes, 1 ♂, 1 ♀, the latter teneral.

This species and the next are of very considerable interest as being the first American representatives of the group typified by *L. (I.) trimaculata* (Zett.) of northern Europe. The genitalia are of a structure that differs in several respects from that of the type of the subgenus *Idioptera*, however, and it may be that all these species are not true members of *Idioptera*. It is with great pleasure that this interesting fly is dedicated to Mr. Shannon as an appreciation of his kind help in collecting Tipulidae in various parts of the United States.

***Limnophila (Idioptera) bifida*, new species.**

General coloration (in alcohol) brownish black; coxae and trochanters obscure yellow; wings dusky grey, the stigma slightly darker; no distinct darker markings on the wing; male hypopygium with the outer pleural appendage profoundly bifid.

Male.—Length about 5 mm.; wing 6 mm.

Female.—Length about 6.5 mm.; wing 6.7 mm.

Described from alcoholic material.

Head, rostrum and palpi brownish black. Antennae brownish black, the distal segments a little paler, if bent backward extending to (♀) or beyond (♂) the wing-root; flagellar segments in the ♂ rather elongate.

Mesonotum and pleura dark brown, the dorso-pleural membranes paler. Halteres elongate, pale, the knobs slightly darker. Legs with the coxae and trochanters obscure yellow; remainder of the legs light brown, the tips of the femora and tibiae slightly darker. Wings with a strong dusky grey tinge; wing-base slightly yellowish; stigma oval, darker grey; exceedingly faint markings at the origin of R_1 and along the cord; veins dark brown. Venation: S_{C1} long, S_{C1} extending to about four-fifths the long R_s , S_{C2} removed a short distance from the tip of S_{C1} ; R_s long, strongly arcuated at origin, in alignment with $R_2 + 3$; $R_2 + 3$ rather long, about twice the deflection of $R_4 + 5$; very faint; veins R_2 and R_3 divergent; cell R_2 at the margin wider than either cells 2nd R_1 or R_3 ; petiole of cell M_1 about as long as the cell; basal deflection of Cu_1 at about one-third the length of cell 1st M_2 ; supernumerary crossvein in cell M a short distance beyond the origin of R_s .

Abdomen dark brownish black. Male hypopygium with the ninth tergite bifid, the lobes narrowly rounded at their tips and provided with blackened spines; pleurites short and stout, the apex of each produced into a flattened lobe; outer pleural appendage very broad, profoundly bifid, the dorsal blade flattened, with the inner margin provided with four or five appressed acute teeth; the ventral blade is narrower, a little shorter, at the tip with a few acute erect spinules; inner pleural appendage flattened, very short and high, rapidly narrowed to the blunt apex, provided with numerous setae. Ovipositor long and slender, the tergal valves upcurved, horn-color.

Habitat.—Idaho.

Holotype, ♂, Moscow Mt., July 25, 1920 (R. C. Shannon).

Allotopotype, ♀.

***Rhaphidolabis (Rhaphidolabis) subsessilis*, new species.**

General coloration (in alcohol) brownish yellow, the praescutum with a conspicuous dark brown stripe; antennae with twelve segments; wings subhyaline; stigma faintly darkened; cell R_2 sessile or subsessile; abdomen dark brown.

Male.—Length about 5.2 mm.; wing 6.7 mm.

Female.—Length about 6.5 mm.; wing 7.4 mm.

Described from alcoholic material.

Rostrum and palpi brown. Antennae with twelve segments, dark brown, the last segment one-half longer than the penultimate. Head dark brown.

Pronotum obscure brownish yellow, broadly dark brown medially. Mesonotum brownish yellow, the praescutum with a conspicuous median dark brown stripe that is narrowed behind, ending before the suture; lateral stripes very indistinct. Pleura brownish yellow. Halteres pale, the stem darker. Legs with the coxae and trochanters brownish yellow; remainder of the legs brown, the tarsal segments darker. Wings subhyaline, iridescent, the stigmal area faintly brownish; veins dark brown. Venation: R_1 moderately elongated, strongly arcuated; cell R_2 sessile to very short petiolate; outer deflection of R_2 less than its own length from the tip of R_1 ; cell 1st M_2 open; cell M_1 present, the branches

that enclose it widely divergent.

Abdomen dark brown, paler laterally. Male hypopygium with the distal lateral angles of the pleurite provided with numerous blackened spines; proximal face of pleurites with long, erect bristles; two pleural appendages, these short and stout, approximately equal in size, the outermost clavate, the head with numerous black spicules; inner appendage pale, the apex broadly and obtusely rounded. Lateral gonapophyses long and slender, approximately as long as the pleurites themselves.

Habitat.—Idaho.

Holotype, ♂, Moscow Mt., July 25, 1920 (R. C. Shannon).

Allotopotype, ♀.

Rhaphidolabis *subsessilis* is closely related to *R. rubescens* Alex. (North-eastern North America) but is readily told by the presence of but twelve antennal segments, the coloration and the elongate lateral gonapophyses of the male hypopygium. In its general appearance it is more like *R. major* Alex. (Colorado), a very different fly.

***Rhaphilolabis (Plectromyia) reducta*, new species.**

General coloration (in alcohol) pale brownish yellow, the praescutum indistinctly darker medially; antennae with only eleven segments; wings hyaline, the stigma lacking; cell R_3 petiolate; abdomen with a subterminal darker brown ring.

Male.—Length 4.2 mm.; wing 5 mm.

Described from alcoholic material.

Rostrum obscure yellow; palpi short, brown. Antennae brown, the basal segment paler; flagellum with only nine segments; flagellar segments long-oval, gradually decreasing in size to the end. Head yellowish brown.

Mesonotum pale brownish yellow, the praescutum indistinctly darker medially; scutal lobes slightly darkened. Pleura yellow. Halteres pale, the knobs brown. Legs with the coxae and trochanters light yellow; remainder of the legs pale brown, the tibiae a little darkened at the tips. Wings hyaline; stigma lacking; veins brown. Venation: R^S comparatively short, strongly arcuated; petiole of cell R_3 long, subequal to the basal deflection of R_4 ; outer deflection of R_2 perpendicular or nearly so, close to the tip of R_1 ; cell M_1 lacking, as in the subgenus, petiole of cell M_3 longer than this cell; basal deflection of Cu_1 a short distance beyond the fork of M , very faint, without macrotrichiae.

Abdominal tergites light brown; sternites more yellowish; segments seven and eight dark brown. Male hypopygium with the pleural appendages short, stout, the tips blunt; one appendage is more slender, near the tip provides with several spinous setae, the other appendage very short and stout with the distal and blunt, set with several short spines and about two long, delicate bristles.

Habitat.—Idaho.

Holotype, ♂, Moscow Mt., July 25, 1920 (R. C. Shannon).

Paratopotype, ♂.

This small fly presents an appearance that is very similar to the type of the subgenus *Plectromyia* except that the cell R_3 is petiolate. The reduction in number of antennal segment is very interesting and difficult of explanation. Within the group *Dicranotae* there is now found a range of from eleven to

fifteen antennal segments (11 in *Rhaphidolabis reducta*; 12 in *Rhaphidolabis subsessiles*, and *Dicranota nipponica*; 13, the normal number for the group; 14 in *Rhaphidolabis flavibasis*; 15 in *Rhaphidolabis fascipennis* and other Oriental species).

***Dicranota rogersi*, new species.**

General coloration gray; mesonotal praescutum with three broad dark brown stripes; antennae of male elongate; wings faintly tinged with brown; stigma dark brown; a paler brown seam along the cord; cell M_1 normally present; cell 1st M_2 open by the atrophy of m . male hypopygium with two subequal pleural appendages; the chitinized blade at base of pleurite with the stem less elongate than in *D. eucera*.

Male.—Length about 5.8 mm.; wing 6.6—7.5 mm.

Female.—Length about 7.5 mm.; wing 9.3 mm.

Rostrum brown, grayish pruinose. Antennae with 13 segments, in the male very long, if bent backward extending nearly to the base of the third abdominal segment; first scapal segment obscure reddish; remainder of antennae dark brown; flagellar segments elongate cylindrical. Head dark brown, the vertex adjoining the eyes broadly yellowish gray.

Mesonotal praescutum with a yellowish gray pollen, with three conspicuous dark brown stripes, the broad median stripe very indistinctly split anteriorly by a capillary pale line; interspaces with erect yellow setae; scutum yellowish gray, the centers of the lobes dark brown; scutellum and postnotum light gray. Pleura gray. Halteres pale, the knobs slightly darkened. Legs with the coxae pale, with a sparse grayish pollen; trochanters obscure yellow; femora dark brown, yellowish basally; remainder of legs dark brown. Wings faintly infuscated; stigma conspicuous, dark brown, occupying cell 2nd R_1 and the distal end of cell Sc_1 ; paler brown seams along the cord and at the origin of R_s ; veins dark brown. Venation: S_C long, extending to slightly beyond r ; S_C far before fork of R_+ , the distance a little greater than that section of S_C beyond R_s ; R_s moderately long, angulated at origin; $R_1 + 2$ about equal to the deflection of R_2 ; r rather indistinct; R_2 less than its own length from the tip of R_1 , entirely provided with macrotrichiae; cell M_1 present in normal individuals; cell 1st M_2 open by the atrophy of m ; petiole of cell M_3 a little shorter than the cell; basal deflection of Cu_1 about one-half its length beyond the fork of M .

Abdominal tergites brown, with about the posterior half of each segment paler brown; sterites a little paler than the tergites. Male hypopygium with the pleurites short and stout, the caudal lateral angle produced into a short, blunt lobe; two sub-equal pleural appendages; outer appendage fleshy, provided with several long setae; inner appendage subchitinized, with a patch of long, erect setae on the proximal face at the base and a group of short setae on the outer face near the tip: at base of pleurite a chitinized blade that is produced into a beak-like structure with the point directed laterad.

Habitat.—Michigan.

Holotype, , Gogebic County, August 17, 1920 (J. S. Rogers).

Allotopotype, ♀.

Paratopotypes, 8 ♂♀.

Type in the Collection of the Museum of Zoology, University of Michigan.

Dicranota rogersi is named in honor of my friend, the collector, Mr. J. Speed Rogers. It is most closely allied to *D. eucera* O. S., in the elongate antennae of the male sex. From this species it differs in the normal presence of cell M_1 , the dark stigma and the details of structure of the male hypopygium, as the subequal pleurites.

A NEW PAPAPEMA FROM DELAWARE (Lepidoptera, Noctuidae)

BY HENRY BIRD AND FRANK MORTON JONES.

(PLATE VI)

Although a collecting trip through peninsular Delaware and Maryland in July 1920 did not have the genus *Papaipema* as its primary object, the possibility of turning up interesting material in this group was well in mind, so that when our car stopped in a promising bit of low woodland along the DuPont Boulevard, a dried stalk in the roadside herbage attracted immediate attention. Investigation showed it to be not one of the recognized food plants of the group, and as the contained larva was not of that almost ubiquitous species, *cataphracta*, a vigorous search was begun for more. In half an hour, more than thirty infested branches had been gathered, and it was apparent that we were dealing with a species whose life history had been unrecorded, and which possibly was new to science. All this was done at very considerable expense to clothing and bodily comfort for the foodplant is that thorniest inhabitant of our woods, *Aralia spinosa*, which as a small tree along the edges of woods and in thickets bordering woodland streams, with its great frond-like leaves and immense flower-panicles, is a conspicuous feature of the flora of southern Delaware. We had too, the unique experience of gathering *Papaipema* larvae from high over our heads, instead of grubbing them out of root-stocks or the fleshy stems of perennial herbs. The tunnels of this insect, in the thick branches of *Aralia*, are of large diameter, beginning at or near the terminal bud and extending downward through the pithy annual growth, often into the older wood below; gummy exudations mixed with blackened frass mark the entrance to the burrow, and the terminal shoot usually dies and shrivels, a hanging cluster of dead leaves often further advertising its location; adventitious shoots from below the point of injury sometimes bear stunted flower-panicles.

In our breeding-cages, pupation occurred more frequently in the larval burrows, rather than in the ground, and another trip was made in early September, in the full expectation that pupae would be found in abundance. Dozens of the typical burrows in the branches of *Aralia* were found, but not one of them contained either larva or pupa, and we were forced to conclude that under natural conditions pupation takes place in the soil, not in the branch of the foodplant. A tabulation of our eastern species of the genus, together with the large size of the *Aralia*-feeding larvae, indicated Dyar's *nephrosyntheta* as the probable identity of our find; but the emergence of the first moth showed that we had, not the anticipated *nephrosyntheta*, but an undescribed species. In this genus, where foodplant association has apparently been a prime factor in the differentiation of so many closely related species, a name derived from that of the foodplant is especially appropriate, and we therefore propose for this insect the name,

***Papaipema araliae* n. sp.**

Head smooth on fons, antenna simple (minutely ciliate under magnific-